

9/648532

@ad<=20041228

DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=OR

L18 L17

274 L18

DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR

L17 (picture\$ with text\$ with (replace\$ or substitut\$ or chang\$))

274 L17

DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=OR

L16 (download\$ with picture\$ with text\$ with (replace\$ or substitut\$ or chang\$))

0 L16

L15 L11 and (telephon\$ with platform)

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L14 L13 and (telephon\$ with platform)

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L13 L12 and (video\$ near2 track)

2 L13

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L10 3394246.pn.

1 L10

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1 L9

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L6 3588480.pn.

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L5 09/976836

1 L5

L4 L3 and gate\$

7 L4

L3 L2 and ("check-in" or check\$)

17 L3

L2 L1 and airport

17 L2

L1 ((securit\$ near2 check\$) same verif\$) and (airport or gate or (check-point)) and @ad<=20011012

81 L1

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L4: Entry 1 of 1

File: USPT

Mar 3, 1998

DOCUMENT-IDENTIFIER: US 5722418 A

TITLE: Method for mediating social and behavioral processes in medicine and business through an interactive telecommunications guidance system

Brief Summary Text (27):

With regard to the prior art, many types of systems have endeavored to provide an effective means for providing surveillance over the behavioral modification of a patient or client by using a telecommunication link. However, these prior art systems have not disclosed an adequate and cost-effective telecommunication network that uses a computer in combination with a telephone or other platforms to provide positive behavioral based motivational messages and/or questions that are answered by a patient or client by means of a dual tone multifrequency telephone set or other platforms.

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L9: Entry 1 of 1

File: USPT

Mar 3, 1998

DOCUMENT-IDENTIFIER: US 5722418 A

TITLE: Method for mediating social and behavioral processes in medicine and business through an interactive telecommunications guidance system

Abstract Text (1):

A method for mediating social and behavioral influence processes through an interactive telecommunications guidance system for use in medicine and business (10) that utilizes an expert (200) such as a physician, counselor, manager, supervisor, trainer, or peer in association with a computer (16) that produces and sends a series of motivational messages and/or questions to a client, patient or employee (50) for changing or reinforcing a specific behavioral problem and goal management. The system (10) consists of a client database (12) and a client program (14) that includes for each client unique motivational messages and/or questions based on a model such as the transtheoretical model of change comprising the six stages of behavioral change (100) and the 14 processes of change (114), as interwining, interacting variables in the modification of health, mental health, and work site behaviors of the client or employee (50). The client program (14) in association with the expert (200) utilizes the associated 14 processes of change (114) to move the client (50) through one of the six stages of behavioral change (100) when appropriate by using a plurality of transmission and receiving means. The database and program are operated by a computer (16) that at preselected time periods sends the messages and/or questions to the client (50) through use of a variety of transmission means and furthermore selects a platform of behavioral issues that is to be addressed based on a given behavioral stage or goal (100) at a given time of day.

Brief Summary Text (31):

The Fuller patent discloses a remote confinement monitoring station and system with a central office that provides means for automatic selection of a specific confinee. The central office selects scheduled or semi-random monitoring calls, to avoid a high degree of predictability by the confinee, auto dialing means for transmission of a prerecorded or synthesized audio instruction message to the confinee, and recording of information received in response to the acts of the selected confinee preformed in response to the communicated message. The central office has a computer with a telephone line modem, a voice synthesizer, and other accessories and displays for automatic recording of data received including a visual camera image and breath analyzer results, and can include automatic image comparison and violation signal alarming.

Brief Summary Text (34):

The Bergeron et al., patent discloses a method and system for the dispatch of resources to remote sites in response to alarm signals. A processor accesses the database of, for instance, a field service engineer designated to provide services to particular remote sites in response to the alarm signals received from those sites. The processor then attempts to establish a telephone connection with the field service engineer and provide the engineer with information by means of synthesized voice messages. The system may execute remote diagnostic programs and determine the results and attempt to communicate with selected resources. The

system has a conventional processor with a database, voice synthesizer, voice system and auto dialer. When the system dials and the telephone is answered, the system requests an identification code by means of the touchtone buttons before it communicates.

Brief Summary Text (37):

The Carroll patent discloses an adaptable electronic monitoring system. The system is configured to fit the needs of a particular monitoring or identification application by selecting appropriate modules. The system provides for monitoring at a central location and communication between the location of the sensed information to the processing site by means of a normal telephone communications system.

Brief Summary Text (39):

The D'Alessio patent discloses a method and system for home incarceration using a telephone network and voice verification. The system has a control center with a process server connected to controllers through a LAN such as an ethernet or wide area network. New inmates are added by voice training so that the system can create voice templates of selected words. A data base of the voice templates and phone numbers, work schedules, etc. is created. Calls received are screened by using caller ID. Calls to and from the inmate are performed on a predetermined or random frequency, the frequency being a function of the patient's behavior. All activities are maintained in a log file.

Detailed Description Text (8):

The Dialogic type card or other similar device 16A allows a speech compression technique to be used that samples a small difference between speech samples and stores a logarithmic function of the difference between the speech samples. This technique results in good speech quality at only 3000 bytes per second. The real-time clock 16B sets and selects the appropriate time for a particular patient to be accessed from the patient database 12 and the patient program 14. The logic network 16C provides the logic necessary to determine if a match between the patient or employee stored in the database 12 and in the patient or employee program 14 is available. The system software 16D provides the algorithms to operate the system 10 in combination with the logic network 16C. The operating steps of the software program are shown in the software flowchart included as FIGS. 2A and 2B.

Detailed Description Text (10):

Both of these signals are applied to the digital signal/telephone tone signal converter 18. The converter 18 includes circuit means to accept and convert the digital signals from the computer 16 to telephone tone signals that correspond to the patient's or employee's telephone number and a personal identification number. The converter 18 can also be designed to include a telephone number redial circuit and a random telephone number dialer circuit. The redial circuit allows a patient's or employee's busy telephone number to be automatically re-dialed at selectable time intervals. The random number dialer allows patient or employee telephone numbers stored in the patient or employee database 12 to be randomly selected and called.

Detailed Description Text (33):

Another preferred embodiment is the use of a computer-based information metering system that uses optical discs 56 as transport and storage media, encrypting to protect data and is metered or by other payment means to permit usage by patients on a pay-per-view or pay per bit of information basis. The encryption-metering device would use digital technology and would be made available through cellular phones, wireless cable transmission, modem, interactive television and CD-ROM. Information would be distributed in encrypted form to users. After the user browses through the menu or index at no charge and selects the item needed, the encryption-metering device will decrypt the information required, record which data was used, by whom and for what issues or subjects, and will permit the user to be billed only for the data used. This information would be unreadable or unlistenable until

decrypted and users would be charged based on the number of bits of information selected. A metering chip or computer board would be used to gauge data use just as an electric meter tracks power demand. Information may be retrieved in either full-text audio or image form. A decryption program keeps track of how much data is decoded and can subtract its costs from a prepaid credit stored on a chip as a form of payment. The encryption-metering technology may use a Microsoft Windows.RTM. based application or other commercially available software, with familiar graphical interfaces and menuing systems to which users are accustomed, and would be available on a variety of computer platforms.

Detailed Description Text (81):

A novel application of the subject invention is that of extending the prior art of physician, manager and counselor behavioral guidance into applying methods utilized in the field of education. The subject invention facilitates the application of educational principles and research by allowing the daily use of interactive quizzes selected by the computer 16 from relevant material to each patient's, employee's or client's 50 stage of progress within the aforementioned transtheoretical model 100 or other applicable behavioral model.

Detailed Description Text (101):

An additional embodiment is to integrate context-dependent memory into the scheme of behavioral reinforcement within the subject invention. Context-dependent memory operates on the effect that reinstating the environment in which an event has been experienced will bring the memory of that event flooding back. Environmental cues have been shown to help to trigger relevant memory trace. In an intervention where behavior is reinforced and occurs only within a select environmental context, replicating the desired environment will trigger the desired behavior.

Detailed Description Text (122):

An additional embodiment is a convertibility feature which permits configuring the subject invention to be in a call-in/call-out mode. The subject invention can be configured for calling out for behavioral reinforcement and guidance of select patients or clients 50 in which the client 50 is contacted through the invention in its various embodiments; or, a dial-in system is provided in which the client 50 or patient contacts the system through various modes which are described in prior embodiments. This is accomplished through the utilization of storage associated with the subject invention and a detector which detects when the subject invention is receiving an incoming telephone call.

Detailed Description Text (124):

And yet another embodiment consists of a break-off control or attention circuit which may terminate the computer interface aborting to a terminal for direct communication with an operator. One appropriate abort capability allows a call to a patient or client 50 to go to vocal communication with an operator, nurse, physician, expert, or counselor in a live mode in order to establish or reinforce rapport, check-up, customer satisfaction, discipline, congratulations, or other forms of approval or disapproval all in a personalized manner. Statistical analysis and selection can be utilized with respect to patients, employees, or clients 50 who are provided such "live" communication through the subject invention.

Detailed Description Text (125):

In various operating formats, the patients, employees or clients 50 may be variously qualified on the basis of entitlement in order to receive personalized intervention. They thus then may be prompted, either through the subject invention or through personalized interaction to provide appropriate data. Software 16D can be programmed as suggested above, or may be qualified as belonging to an entitled set of persons to accommodate specific health, sales, marketing, or management objectives. Alternatively, patients or client 50s may be selected based upon varying levels of critical need. Where necessary, verification of identity can be provided through a personal identification number (PIN) and/or credit card numbers.

Detailed Description Text (126):

Another distinct operation may involve actuation of a printer 32 to provide documents in relation to the operating format, or as for providing award certificates or coupons to isolated clients 50 or patients. The subject invention in this enhancement thus allows a subset of clients 50 or individuals to be isolated with respect to need, infirmity, disease, psychological attribute, or change in current condition. Furthermore, the subject invention in this embodiment comprises a conventional communication or telephone instrument for voice communication means in order to provide vocal operating instructions to an individual patient, employee or client 50. Allowing a person to communicate directly with said individual. Alternatively, on incoming calls after the patient or client 50 has once identified himself with his personal identification number (PIN) or credit card, the subject invention includes a cut-through circuit which enables the client 50 or patient to directly access a physician, expert 200, nurse or counselor for response to questions presented. In the alternative, on incoming calls, a member of the aforesaid group could randomly select to interact with respondents.

Detailed Description Text (127):

The subject invention thus uniquely allows an individual to verbally communicate with patients, employees or clients 50. From the respondent's viewpoint, this makes the interaction more interesting in his not knowing when he will hear from a live individual for additional guidance. Alternatively, the patient, employee or client 50 can utilize the subject invention as a "hot line" for emergency or urgently-needed reinforcement. In instances where the live expert, manager, 200 or surrogate counselor interrupted the incoming call an audible ring or other distinct sound could be provided announcing his pending arrival thus allowing physicians, nurses, experts and counselors or their surrogates to selectively interact with patient, employee, or client 50 participants in a unique and novel manner which further extends the prior art.

Detailed Description Text (133):

Still another preferred embodiment will be the combining of behavioral messages which are related in real time and content to each of a plurality of derivative secondary interrogatory-containing messages with, preferably, only one of the plurality of other tracks comprising a unique selectable responsive message to a particular one of the real time related derivative secondary interrogatory messages which are chainlinked in content to a particular primary interrogatory message. Thus, the stored primary and derivative secondary interrogatory messages and the associated responsive messages are spatially related to each other along with storage medium tracks in the subject invention in real time and further related in content to one another for providing a transitional derivative response to the primary interrogatory message dependent on the track selected and the real time of selection for providing a conversational real time transitional environment. In this manner, the patient, employee or client 50 appears to verbally interact with the remotely-located storage medium in the subject invention on an individual patient, employee or client 50 basis which may vary from message to message.

Detailed Description Text (141):

An example would be in the field of weight loss. A client 50 could commit to not consuming more than 1500 calories a day for five days. In exchange thereof, he could select a reinforcer such as going to a motion picture upon the sixth or subsequent day which would act as a reward or reinforcer. The announcement and/or prerecorded commitment on the patient's or client's part to engage in approved behavior during a prescribed interval would be accompanied by a predetermined reward which would then be played to him upon his achievement of his own or negotiated preset goals. By announcing and recording his commitment to his goals, the client 50 or patient makes a public semi-commitment to change. The subject

invention uniquely allows the client 50 to both choose his reward or reinforcer and then to immediately receive confirmation of his achievement of it once he has met prescribed goals. This self-reinforcing procedure uniquely extends the prior art and allows the client 50 himself to integrate his unique positive behavioral reinforcers into his daily lifestyle utilizing computerized telecommunications.

Detailed Description Text (143):

And yet another embodiment would be the application of the behavioral principle of stimulus control. In this embodiment the patient, employee or client 50 would receive behavioral guidance and reinforcement delivered by the subject invention at a fixed time and fixed place on a regular or periodic schedule. A novel characteristic among others of the subject invention is that it is flexible and can deliver behavioral reinforcement and guidance at any time, 24 hours a day, and to any predetermined place which is accessible by remote communications. By selecting a predetermined time and place for behavioral reinforcement in conjunction with the client 50, the principle of stimulus control can be utilized in conjunction with the subject invention in a novel and unique manner. In all prior embodiments, it has been assumed that the reinforcement could be applied in either a random or fixed time interval. However, in this embodiment both the time and/or the place of reinforcement are predetermined and fixed. The client 50 thus associates the place of reinforcement with the message of reinforcement within that time interval. In other words, if four o'clock and a specific place or room are designated by the patient or client 50 and physician or counselor 200, then the daily or periodic nature of this prearrangement acts to amplify the reinforcement of the stimulus of the behavioral prompts and cues.

Detailed Description Text (165):

Yet another preferred embodiment would be the provision of a mechanism to provide the client 50 or patient with choice as to the mode of presentation of the behavioral reinforcement. The exercise of choice is an important cognitive principle in guiding human behavior. By providing the option of choice, self-control is fostered and self-esteem is enhanced. Inasmuch as the goal of any behavioral reinforcement scheme is the fostering of greater positive self-control by the patient, employee or client 50, the subject invention uniquely embodies the mechanism of choice. Patients, employees, or clients 50 are quizzed or polled as to their performance as previously described. In addition they are given choices as to the form of the specific intervention. For instance, as part of this embodiment a client, employee 50 or patient would be asked whether he preferred to receive reinforcement in a visual or auditory mode. By choosing a visual mode he could receive text or live or prerecorded video on either a television screen 44, computer or telephone screen or video phone 54. Alternatively, the visual text might be received on a similar hand-held or portable device 36. If the client 50, employee or patient were to choose a portable auditory or visual mode, the subject invention would allow him to receive auditory or visual behavioral reinforcement, prompts and cues through the use of a wired or wireless telephone or alphanumeric beeper device 58 respectively. Upon the client 50 electing to access an auditory or visual mode the computer would activate the appropriate storage and/or platform for the transmission of behavioral reinforcement accordingly. Alternatively, if the client, employee 50 or patient could elect to choose a form of behavioral content which would be appropriate for his particular issue. Thus the vital behavioral reinforcer of the provision of choice is fostered uniquely by the subject invention in a new and novel manner within the patient's, employee's or client's 50 natural environment. By providing choice, the client, employee 50 or patient is able to select the most personally relevant content and mode of intervention at the moment in order to derive qualitative behavioral reinforcement, explanations, and to develop models for making new knowledge fit in a more relevant and meaningful structure into what has been previously assimilated.

Detailed Description Text (179):

And yet a further embodiment of the subject invention is the integration of an

enhanced graphical interface or hypertext into the text provided by the computer 16, television screen 44, text phone 36, lap top computer or other similar device. Hypertext is an elaborated form of text which is possible through the use of an interactive computer interface and may be available on CD-ROMS or other storage or related transmission media. Hypertext permits the provision of multiple reinforcers in the subject invention. Hypertext is a form of text which allows the patient, employee or client 50 to make choices and thus branches accordingly in its provision of content. It allows the patient, employee or client 50 to select information and proceed according to his own areas of interest and relevance to his or her self. The subject invention thus uniquely integrates the behavioral concept of choice with a text-driven medium which allows the patient, employee or client 50 to utilize choice for expanded interest and self-confidence.

Detailed Description Text (188):

By applying human factors and the psychology of perception, the subject invention uniquely combines a number of desperate technologies. These technologies for input, output, entry, image management and command reduce user disorientation and combine to more closely simulate a natural interaction between the physician, counselor, administrative or expert 200 and the patient, employee or client 50. Command technologies allow the user to tell the subject invention of his choices and selections by speaking a command or reply and by directing the system through eye movements or gesturing just as pointing devices, like the mouse, have been used in the past. Semantic modeling is utilized to enable diagnostic, error recovery, and user-cueing procedures. The use of gesture recognition increases the naturalness of the interaction between the patient, employee or client 50 and the system and further facilitates convenience and ease of use in a novel manner which exceeds the prior art.

Detailed Description Text (208):

The specific content of said document would be adapted to each individual patient, client or employee 50 based upon his education, gender, age, demographic profile, psychological profile and prior response profiles, said educational document and text would be further formulated according to the individual's present behavioral stage 100. The patient or employee program 14 would respond to the individual response profiles, individual psychological, demographic and other historical data, and selectively draw upon generalized educational and motivational data in accordance with a behavioral algorithm containing various processes 114 for appropriate and timely insights and guidance for each individual all in accordance with the predetermined model 100. The patient or employee program 14 would thus respond to stored information signals indicative of customized recipient information for selecting certain generalized informational and educational prompts and cues of said pre-recorded signals indicative of certain segments to be retrieved selectively and in a given sequence for compilation purposes all in accordance with the predetermined model 100.

Detailed Description Text (209):

All of the aforesaid would be available as text and printed or transmitted by wired or wireless telephone, cable, the mail or delivered in person or by video. In addition, the aforesaid customized text and graphic communications could be accessed by the patient 50 via facsimile (FAX) transmission for behavioral guidance. A further variation on this embodiment would be to transmit the text via modem and telephone or cable by giving each patient, client or employee 50 a telephone number. The system would ask what information he wanted and request his fax number along with a menu of additional options. By giving his current FAX number through touch tone or voice recognition and selecting menu options by the same, the patient 50 would be able to receive a customized hard copy of his requested educational and motivational text immediately. Alternatively, the above could be sent via modem to the patient's, client's or employee's printer.

Detailed Description Paragraph Table (2):

TABLE II _____ Correlation Between Behavioral Stage and Selected Processes of Change Behavioral Stage Process of Change

raising Dramatic relief	1. Contemplation Intervention	Consciousness
Helping relationships	2. Preparation Self reevaluation	Environmental reevaluation
control Reinforcement management	3. Action Self liberation	Counterconditioning Stimulus
Counterconditioning Stimulus control	4. Maintenance	

Other Reference Publication (2):

Nelson, R. Eric and Craighead, W. Edward, "Selective Recall of Positive and Negative Feedback, Self-control Behaviors and Depression," Jrnl. Abnormal Psych. 1977, vol. 86 No. 4, 379-388.

CLAIMS:

1. A system for interactive preventative medical guidance and commercial goal management comprising:

a) polling means for creating a database of personalized input data indicative of an individual's particular behavioral issue;

b) evaluation means for determining an individual's temporal behavioral stage from said database selected from one of a plurality of behavioral stages;

(c) mediation means for determining from said evaluation means and said database a behavioral routine for changing said selected temporal behavioral stage;

(d) program means including transmission means for delivering to said individual specific content based communication based on said behavioral routine determined by said mediation means for changing said selected temporal behavioral stage; and

(e) feedback means for receiving an individual's response to said content based communication wherein said mediation means provides periodic reevaluation of said response for determining readjustment of said behavioral routine and said content based communication.

6. The system as specified in claim 5 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes guided imagery through prompts and ques delivered by said counselor.

7. The system as specified in claim 5 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes systematic desensitization.

9. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage comprises an overlearning technique.

10. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage comprises application of a generation effect.

11. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes refresher practice.

12. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes contextual variety.

13. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes delivery of an increased plurality of descriptive examples.

14. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes double-bind quizzes and questions to crystallize positive compliance.

15. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes an interactive quiz.

16. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage utilizes time and place shifting in delivering said individual specific content based communication.

17. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage integrates context-dependent memory for said individual's particular behavioral issue into said behavioral routine.

18. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage uses state-dependent memory for said individual's particular behavioral issue into said behavioral routine.

19. The system as specified in claim 1 wherein said behavioral routine for changing said selected temporal behavioral stage comprises means of awarding and crediting rewards from a predetermined deposit.

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L8: Entry 1 of 1

File: USPT

Jul 21, 1998

DOCUMENT-IDENTIFIER: US 5782692 A

TITLE: Time-segmented multimedia game playing and authoring system

Detailed Description Text (29):

The multimedia presentation is segmented with respect to specific beginning and ending points of segments on the time axis, i.e. there are one or more points of time that partition the time axis into time segments. Typically, the multimedia presentation can be played either as a whole or in a segment-dependent fashion, for instance, when a pause or another media is played in between two time segments, or when the user is allowed to select and play an arbitrary time segment.

Detailed Description Text (32):

For purposes of this invention, a game, teaching, or instructional tool (hereinafter "multimedia game") is a software program that accepts a user's input during the time a time-segmented multimedia presentation is played, interprets the input as a selection among possible choices, evaluates the choice and provides the user with feedback about the value of the choice s/he has selected.

Detailed Description Text (34):

By linking to the starting and ending times of each time segment of the presentation played, the game layer presents to the user the choices associated with each time segment. It then interprets the user's input as a selection of a choice, evaluates the selected choice and gives the user a feedback that reflects the resulting value.

Detailed Description Text (36):

Referring to FIG. 3b, the explore mode of the multimedia game proceeds in the following way. First, the section of the text linked to the time segment is highlighted, and the time segment of the presentation is retrieved and played. If there is no user input, the presentation continues playing until its end is reached. Then the text is de-highlighted and the presentation proceeds with the next time segment. If the user does not interact with the game, all of the time segments of the presentation will be played in sequence. The user can, however, interrupt the play and choose an arbitrary time segment. This can be realized, for instance, by clicking on any desired text section. Then an associated media asset (e.g. native speaker's pronunciation of the segment's text) can be played and the presentation resumes starting with the selected segment. Other forms of interaction with the user are possible, such as playing only one segment at a time or playing the time segments in randomly shuffled order.

Detailed Description Text (37):

The control flow diagram in FIG. 3c illustrates the core multimedia game-playing algorithm for an example of a game in which a user selects a choice related to the text accompanying a multimedia presentation. It depicts the case that time segments are played in sequence without interruption. At the beginning of each time segment, the linked section of the text track is highlighted, and the choices available to the user for this segment are fetched. Then these choices can be presented to the user and the time segment of the presentation starts playing. While the time

segment of the presentation is played, the multimedia game accepts user input and interprets it as a selection of a choice. The game program then fetches the value of the selected choice with respect to the current time segment and gives the user a sensory feedback of this value. Once the time segment reaches its ending point, the text is de-highlighted and the game proceeds with the next time segment.

Detailed Description Text (39):

The user can input in numerous ways, e.g. click with a mouse on a choice within the menu, type a key that identifies a choice, select a choice with a joystick or pointer, push a software or hardware button while a choice is presented, identify a choice using a microphone or any other input device. The input can also be continuous, as in the recording of the user's voice.

Detailed Description Text (41):

The evaluation can result in one or more numbers, or an identification of a media element (e.g. image or sound), or simply in either a "correct" or an "incorrect" feedback, or any combination there of. The value of the user's choice can also depend on other factors, such as the history of the user's performance. For instance, if several choices are related to the same segment, selecting a choice might influence the evaluation of subsequent choices, e.g. the user might be required to select the choices in a certain order to receive the maximum score or an incorrect choice might decrease the value of the next correct choice.

Detailed Description Text (65):

The SAS is particularly useful for editing a time-segmented presentation to obtain a optional multimedia game. As shown in FIG. 12, SAS displays the set of segments already specified and ordered according to their start points. It allows the author to select one current segment from the sequence of segments. The current segment can be then edited. The author can insert a new segment at an arbitrary position in the sequence (e.g. before or after the current segment), and delete the current segment.

Detailed Description Text (66):

To facilitate editing an individual segment, the system displays the current segment's start and end points separately. This way, the author can select which one of these "boundary points" s/he wants to edit. The coordinate of the current boundary point can be moved with respect to the time axis. Since the end point of a segment is closely related to the start point of the next segment, the SAS' user interface allows the author to ensure that changes of the boundary point of one segment are immediately reflected in the changes of the corresponding boundary point of the adjacent segment. The relationship between the two corresponding points includes keeping the distance constant (keeping the distance equal to zero means that the end of one segment will be always the start point of its neighbor), or ensuring that the points remain at least a minimum distance (e.g. to prevent overlapping segments) or ensuring that the points maintain at most a maximum distance (keeping the points close together can simplify editing of the next segment).

Detailed Description Text (67):

Conventional editing systems allow the author to select and replay a time interval. SAS adapts this functionality to segment-based editing allowing the author to replay the current segment. However, to specify the boundary point of a lengthy segment, it is inconvenient to replay the entire segment. Therefore, SAS allows the author to enter a maximum replay time .DELTA.T labeled "delta" on the screen. If the start point T.sub.s is being modified, the replay interval is always from T.sub.s to (T.sub.s + .DELTA.T) independent of T.sub.s. If the end point T.sub.e is being modified, the replay interval is always from (T.sub.e -.DELTA.T) to T.sub.e independent of the value of T.sub.e. The boundary points can be edited using either a textual/numeric or graphical interface as described herein.

Detailed Description Text (68):

SAS can also be used to simplify the synchronization of the text track with the motion video and sound track. It allows the author to enter text into a text field, select a portion of the text and assign it to a segment. Similarly, SAS allows the author to select a portion of the text track and associate it with choice available to the user (or an "event").

Detailed Description Text (83):

The user can switch between "explore" and "game" mode of interaction as shown in FIG. 3a. In the "explore" mode (FIG. 7a), s/he can click within the video window to start playing the music video and click again to pause. The next click will resume the music video. This way all the segments of the music video can be viewed in their natural sequence. Clicking on a phrase in the lyrics field will highlight it, say it in native speakers voice and then play the corresponding video segment. The user can also click on a segment in the segment bar to play the video starting with the selected segment. Both methods of segment selection stop the currently played video before continuing. This simple user interface allows the user to replay a segment, go to the next or previous segment or choose an arbitrary segment.

Detailed Description Text (84):

When the user switches into the "game" mode, the game area is filled with a score field a set of tiles that can be selected by the user. The game is a well known "fill-in-the-blanks" game. The tiles are labeled with words extracted from the lyrics. In the lyric's field each of these words has been replaced by a dot pattern. The user's task is to fill in as many missing words of the song's lyrics as possible. As shown in FIG. 7b, the game program plays the entire sequence of the presentation's time segments and highlights the current segment in the lyrics and the segment bar. Clicking on one of the tiles (the only relevant interaction in the "game" mode), is evaluated as an attempt to fill the tile's label into the lyrics. The user's choices are limited by the time span of the current segment. If s/he selects a tile whose label is missing from the current time segment, the score is incremented, the label replaces the dot pattern in the lyrics field and the tile is taken off the game area. On the other hand, clicking on a tile that does not fit into the highlighted segment decreases the score. Removing the tiles reveals the singer's picture hidden underneath.

Detailed Description Text (94):

As shown in FIG. 10, when a time segment starts, the corresponding dialog (typically one or two lines) is displayed on the screen. The user's choices are then displayed one at a time. In a "fill-in-the-blanks" game (such as described in 4.1), the choice can be directly integrated into the current dialog lines. Color can be used to distinguish the choice from the original text. According to FIG. 9b, each choice within a time segment is displayed for the same length of time (i.e. length of the time segment divided by the number of choices). Another advantage of this version is that only one type of input is needed. As only one choice is presented at a time, any user input indicates the selection of this choice. User input can be provided via designated control button on the game player, or via remote buttons or controller unit buttons for interactive TV. This selection is then evaluated and its score incremented accordingly.

Detailed Description Text (109):

In the upper left screen area, SAS displays a table that allows the author to manage the set of segments. Here, the author can add a segment, delete a segment, select a segment, link resources to a segment, and link a text section to a segment. The first column of the table contains a field with a bullet marking the current segment. The second column holds the segment indices. The third column shows the start and end points of each segment. The fourth column contains the indices of characters in the text track linked to the segment. The fifth column contains the names of additional resources linked to each segment (in our example the identification of an associated sound track with the native speaker's

pronunciation of the segment's text.)

Detailed Description Text (121):

The third pane of the segment specification area is labeled "adjacent point". It specifies how changes of the current boundary point affect the adjacent point. If the current boundary point is the start point, the adjacent point is the end point of the previous segment. Similarly, the adjacent point of an end point is the start point of the next segment. The third pane contains radio buttons "const", "at least", and "at most". If none of these buttons is selected, changing the current boundary point does not effect the adjacent point. If one of these three buttons is highlighted, a field appears to the left of the button. Here the author can specify the "delta time span" (in thousandths of seconds), i.e. the distance to be maintained in between the current boundary point and the adjacent point. If "const" is selected, the delta time span remains always constant, i.e. any change of the current boundary point causes the same change in the adjacent point. For instance, if delta is zero, then the current boundary point and the adjacent point keep the same coordinates during editing. If "at least" is selected, SAS maintains at least the delta time span in between the current boundary point and the adjacent point. This means that the adjacent point will not be affected if editing increases the distance between the points. If editing decreases the distance, SAS may alter the adjacent point to maintain the delta time span. For example, this setting can be used to ensure that segments do not overlap. Similarly, if "at most" is selected, the adjacent point will not be further than delta from the current boundary point.

Detailed Description Text (124):

The "event table" in the lower left portion of the screen is reserved for the module that allows the author to manage the set of choices (or events). Here, the author can add a choice, delete a choice, select the current choice, link value to the current choice, link feedback to the current choice, and link selected text to the current choice. The table has five columns that show how the choices relate to the segments and their intervals in the text track. The left column contains a bullet marking the current choice. Each choice must be fully contained within one segment; the second and third column identify the section of the text track that is linked to the choice (i.e. the indices of the choice's beginning and ending characters and the text section itself). The rightmost column contains the resources linked to the choice, e.g. the label of a tile to be displayed in the game area.

Detailed Description Text (125):

The lower right portion of the screen allows the author to edit the text track. Here, he or she can select a section of the text and use the standard text editing operations (typing in, cut, copy, and paste) to insert and delete text sections. The left field of the text track contains the complete transcript of the text to be synchronized. The left field of the text track helps visualize the events by replacing the events' text with dot patterns.

Detailed Description Text (130):

The "Author" menu contains commands that edit the segment and event tables (FIG. 15). The command "Init Segments" clears the entire table (i.e. deletes all segments.) The command "New Segment" inserts a new segment either before or after the current segment with both boundary points equal to either the start point or the end point of the current segment. The command "Delete Segment" deletes the current segment. Then, either the following or (if the last segment is deleted) the preceding segment becomes the current segment. The command "Update Segment" interprets the begin and end of the current selection in the text field as the attributes of the current segment and updates these attributes in the segment table.

Detailed Description Text (131):

The command "Init Events" in the "Author" menu clears the entire table (i.e.

deletes all choices.) The command "Delete Event" deletes the current choice. Then, it makes either the following or, if the last choice is deleted, the preceding choice the current choice. The command "New Event" inserts a new choice as the last choice in the table. The command "Update Event" links the current selection in the text track to the current choice. It updates indices of the beginning and ending character of the section in the event table and reorders the table if necessary to maintain the choices sorted according to the index of the beginning character. The command "Associate" provides the author with another way to link a choice with the current segment.

Detailed Description Text (133):

The graphical pane of the segment specification area can be also used for editing and changing the editing parameters. Dragging the icon of the current boundary point changes its coordinate. Since the replay time span must remain constant, this operation also changes the position of the "replay limit" icon. Furthermore, depending on which button is selected in the "adjacent point" pane, the coordinate of the adjacent point might be changed, too. Dragging the "replay limit" icon changes the value in the field associated with the highlighted button in the "replay" pane. Finally, dragging the icon of the adjacent point changes the "delta" time in the "adjacent point" pane.

Detailed Description Text (137):

The Multimedia Game does not need to play the presentation's time segments in their natural order. For instance an "Ordering Game" can present the time segments in shuffled order and let the user find a predetermined correct sequence. The evaluation with the Multimedia Game can be asynchronous, i.e. user's interaction with can be recorded and evaluated at later time. This way a teacher can evaluate a students' performance and provide motivating feedback. Other tracks of the multimedia presentation can involve other sensory input and output such as smell, taste and tactile sensations, as well as activation and analysis of user's neural signals. The same extensions of input and output are feasible for the presentation and selection of user's choices within the evaluation tool. In addition, handwriting recognition can be used for user's input. The presentation and time segments can be associated with a variety of other resources. For instance clicking on a word in the text track can lead to a dictionary, a thesaurus, an encyclopedia, a library catalog or establish a connection with a remote on-line service, initiate a search query and display its results. The invention is also independent of the presentation of the choices and the evaluation feedback. The choices and the feedback can be, for instance integrated into a picture of a board game, such as a crossword puzzle or Monopoly.TM.. The extensions of the output described above can be used to provide the user with feedback indicating the value of his/her choices. The evaluation can involve such feedback as visualization of differences in pronunciation patterns and any processes involved in generating speech, such as positions of tongue and other parts of human body and air flow patterns or correct pronunciation based on the user's voice signature. The difficulty of the tasks can be changed by varying the speed of the multimedia presentation in the evaluation mode. Alternately tracks can be changed or omitted in evaluation mode, e.g. by muting the sound track, hiding the text track or presenting its translation into another language. Also the real-time recording of user's interaction with the system can be incorporated into either the presentation or the presentation of the choices in the evaluation mode.

CLAIMS:

1. A method for playing an interactive multimedia game comprising the steps of:

providing a multimedia presentation comprised of a plurality of recorded media tracks with at least a video track that is clocked in accordance with time address points of a given time axis;

providing a programmed game sequence for play on a player unit, including displaying video images of the video track of the multimedia presentation in conjunction with receiving user input;

dividing at least said video track of said multimedia presentation into a plurality of presentation segments having respective start and end time address points on the given time axis,

linking each of a plurality of game sequence subunits of said programmed game sequence to start and end time address points of respective ones of said video track presentation segments;

displaying game choices stored with each respective one of the game sequence subunits in conjunction with displaying respectively linked video track presentation segment during a time period delimited by the start and end time address points of the respective presentation segment; and

receiving a user input at any time during the time period of said respective presentation segment as a selection of a game choice for the respective game sequence subunit linked to said presentation segment, and providing a game sequence output determined by said game sequence subunit in accordance with said user input selection of said game choice.

5. A method for authoring an interactive multimedia game for play on a game player unit comprising the steps of:

recording a multimedia presentation comprised of a plurality of recorded media tracks with at least a video track that is clocked in accordance with time address points of a given time axis;

providing a programmed game sequence to be operated on the game player unit in conjunction with playback of the recorded multimedia presentation, said programmed game sequence having user input means for receiving user input entered on the game player unit, game sequence display means for displaying game sequence images in conjunction with playback of the multimedia presentation, and game sequence output means for providing game sequence outputs in response to the user input;

dividing said video track of the multimedia presentation into a plurality of presentation segments having respective start and end time address points with respect to the given time axis;

defining a plurality of game sequence subunits of said programmed game sequence, wherein each game sequence subunit is operationally linked to the start and end time address points of a respective one of said video track presentation segments,

defining game choices for each respective one of the game sequence subunits to be displayed in conjunction with display of the respectively linked video track presentation segment during a time period delimited by the start and end time address points for the respective presentation segment; and

defining game sequence outputs for the respective game sequence subunit in accordance with a selection of a game choice made by user input received at any time during the time period of the respective multimedia presentation segment,

whereby the programmed game sequence is authored so that the interactive multimedia game can be played on the game player unit by displaying game choices for each of the segments of the multimedia presentation and providing game sequence outputs in accordance with selections made by user input.

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